

The Perception of Ideal Facial Aesthetics Among Middle Eastern University Dental Students

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Research

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Abstract

Background: The perception of facial aesthetics has been the subject of debate since ancient times and it is not considered to be absolute or fixed, rather relative. The dynamic relativity of facial aesthetics is thought to be affected by many factors, including but not limited to ethnicity, demographic variations, geographic locations, and other social backgrounds. The aim of this study was to assess the perception of ideal facial aesthetics among dental students in their preclinical and clinical years.

Methods: A cross-sectional study of all dentistry students (n= 175 students) at Kuwait University Faculty of Dentistry. A morphometric questionnaire of six computer-generated 3D avatar female models with various facial features were constructed by altering the facial units: jaw shapes, chin shapes, nose shapes, mouth shapes, cheek shapes, profile shapes. Students were asked to choose the most and least preferred among the 6 avatar models.

Results: A total of 149 questionnaire were completed by the students, with an overall response rate of 85.1%. The majority of students were female (92.6%). The preclinical and clinical students agreed on the most and least attractive facial model for all features except jaw shape. Students agreed that models with a broad jaw shape, moderately protruded chin with moderate height, short and less projected nose, prominent and full projected lips, prominent cheek bone with minimal buccal fat, and straight profile, were considered the most attractive faces.

Conclusion: The study showed that dental students at Kuwait University have a perception of the facial esthetics that is largely in accordance with previously published studies. Dental students must recognize the variations of facial units and ideals of esthetics to better understand the demands and wishes of the patients, and thus, optimizing the treatment plan to achieve this goal.

Background:

Physical appearance and self-perception are two fundamentals in building the individuals self-esteem, which to a great extent is affected by facial aesthetics. [1–3] Many studies were conducted to analyze the facial characteristics that determine facial beauty as it is a key factor in social interactions. [1–4] Most people seek treatment to enhance their facial beauty and not only well-aligned healthy teeth and ideal occlusion. [5] The perception of facial aesthetics has been the subject of debate since ancient times and it is not considered to be absolute or fixed, rather relative. [1, 3] The dynamic relativity of facial aesthetics is thought to be affected by many factors, including but not limited to ethnicity, demographic variations, geographic locations, and other social backgrounds. [1, 6] In the modern world, the society is becoming more aware and conscious towards the ideal facial beauty due to the enormous impact of social media culture. [4] Even the slightest imperfections became undesirable since celebrities and doctors are displaying flawless beauty and encouraging perfection. [4] It is important to keep in mind that in some cultures and the ethnic groups, these disproportions are considered attractive, however, sometimes what is considered beautiful does not fall within the norms of the society. [7, 8] The recent increase in the

seeking behavior to attain the ideal facial beauty underlines the importance of understanding patient's preferences, and expectations of the treatment delivered, in order to provide the most favorable patient-centered treatment. [4, 7, 9]

Defining an ideal face to be considered most aesthetic in a given population depends on the analysis and interpretation of aesthetic components of various facial subunits, which include: facial height, width, nose shape, profile, lips and mouth, and skeletal framework affecting jaw angle, chin and malar area. [2, 7, 9–11] The lips are particularly one of the most significant parts of the face because of its centered position that attracts the attention. [2] Their shape and definition affects the overall youth and attractiveness of the face.[12] The jaw and chin which are included in the lower facial third are a critical factor in determining the facial attractiveness. [11, 13] In addition to the nose and cheek that construct the facial profile. [2, 7, 9] An evaluation of each of these aesthetic regions separately and defining the most attractive form of it will ease our understanding of the social preferences toward defining the overall facial attractiveness. [9]. The aim of this study was to assess the perception of ideal facial aesthetics among dental students in their preclinical and clinical years.

Methods:

A cross-sectional survey of all dentistry students (n = 175 students) at Kuwait University Faculty of Dentistry was conducted between February to March 2020. The study protocol was approved by the Ethical Committee at Kuwait University Health Sciences Center according to Helsinki Declaration (Application Number 2888/2019). Participants voluntarily consented to complete the questionnaire, filled it out, and were assured that their responses were anonymous.

A morphometric questionnaire of various computer-generated facial features was constructed to determine the ideals of aesthetics among the student. An avatar 3D models were constructed using a human rendering software (DAZ Studio, Daz Productions Inc., USA). The facial features were modified digitally in the 3D rendered female avatar model to create 6 variations for each of the following features:

1. Jaw Shapes
2. Chin Shapes
3. Nose Shapes
4. Mouth Shapes
5. Cheek Shapes
6. Profile Shapes

The students were asked to choose the most and least preferred characteristics in terms of the above-mentioned features among the 6 avatar models for each of the 6 modified facial features.

Statistical Analysis

Statistical analysis was performed using SPSS version 23 (IBM Corp. Released 2015. IBM SPSS Statistics for Macintosh, Version 23.0. Armonk, NY: IBM Corp.). The students were divided into two groups, pre-clinical and clinical based on their year of study, 1st to 4th and 5th to 7th respectively. For each facial feature the student's responses to most attractive and least attractive were compared between these groups. The proportion of students that voted for the model that the majority of pre-clinical students found most attractive or least attractive was compared with clinical year students using the chi-square test. This was also performed for the model that the clinical students found most or least attractive compared to the pre-clinical students. A p-value of < 0.05 was considered statistically significant.

Results:

A total of 149 questionnaire were completed by the students, with an overall response rate of 85.1%. The majority of students were female (92.6%). The response rate and gender profile for each year group is displayed in Table 1. The preclinical and clinical students agreed on the most and least attractive facial model for all features except jaw shape, see Table 2. Summary of attractive facial features and least attractive among all dental students is showed in Table 3, and Figs. 1–6.

Table 1
Characteristics of participating students.

Group	Respondents		Response	Age	Gender	
	Class	n	Class size	n / Class size = %	Range	Male
1st year	30	33	90.9%	18–25	3 (10%)	27 (90%)
2nd year	20	29	69.0%	18–25	2 (10%)	18 (90%)
3rd year	20	23	87.0%	18–25	4 (20%)	16 (80%)
4th year	17	20	85.0%	18–25	1 (5.9%)	16 (94.1%)
5th year	23	27	85.2%	18–25	0	23 (100%)
6th year	19	22	86.4%	18–25	1 (5.3%)	18 (94.7%)
7th year	20	21	95.2%	18–25	0	20 (100%)
Total	149	175	85.1%	18–25	11 (7.4%)	138 (92.6%)

Table 2

Differences between preferences for various facial features between dental students in their preclinical years versus clinical years.

Item	Feature	Dental Students in Preclinical Years (1st, 2nd, 3rd ,4th year) (n = 87)	p-value	Dental Students in Clinical Years (5th, 6th, 7th year) (n = 62)	p-value
Jaw Shapes	Most Attractive	Model 2 (29.9% vs 21.0%)	0.222	Model 4 (25.8% vs 13.8%)	0.064
	Least Attractive	Model 3 (41.4% vs 22.6%)	0.017	Model 5 (40.3% vs 29.9%)	0.186
Chin Shapes	Most Attractive	Model 6 (40.2% vs 41.9%)	0.835	Model 6 (41.9% vs 40.2%)	0.835
	Least Attractive	Model 2 (41.4% vs 53.2%)	0.153	Model 2 (53.2% vs 41.4%)	0.153
Nose Shapes	Most Attractive	Model 1 (48.3% vs 50.0%)	0.836	Model 1 (50.0% vs 48.3%)	0.836
	Least Attractive	Model 6 (85.1% vs 85.5%)	0.942	Model 6 (85.5% vs 85.1%)	0.942
Mouth Shapes	Most Attractive	Model 2 (40.2% vs 41.9%)	0.835	Model 2 (41.9% vs 40.2%)	0.835
	Least Attractive	Model 6 (82.8% vs 87.1%)	0.470	Model 6 (87.1% vs 82.8%)	0.470
Cheek Shapes	Most Attractive	Model 1 (33.3% vs 37.1%)	0.635	Model 1 (37.1% vs 33.3%)	0.635
	Least Attractive	Model 3 (48.3% vs 54.8%)	0.430	Model 3 (54.8% vs 48.3%)	0.430
Profile Shapes	Most Attractive	Model 1 (42.5% vs 53.2%)	0.197	Model 1 (53.2% vs 42.5%)	0.197
	Least Attractive	Model 2 (74.7% vs 77.4%)	0.704	Model 2 (77.4% vs 74.7%)	0.704

Overall, Model 2 was the most popular choice for most attractive jaw shape. On subgroup analysis, the preclinical students selected Model 2 as the most attractive jaw shape. Model 2 was selected by 29.9% of the preclinical students and 21% of the clinical students and this was not significantly different ($p = 0.222$). The clinical year students choose Model 4 as the most attractive. With regard to chin shapes, nose shapes, mouth shapes, cheek shapes, profile shapes, there was an agreement among dental students in their clinical and preclinical years on the most and least attractive models, which is demonstrated in Tables 2 and 3.

Discussion:

The beauty controversy has always existed since ancient times among various cultures and civilizations, and different strata of society. Despite their differences and disparities among groups, it seems that there was always an agreement towards seeking ideal proportions and ratios to define facial beauty. [14, 15] Over the years, people strived to define and quantify facial attractiveness; however, it is difficult to confine or determine the standards of beauty because it is relative rather than fixed or absolute. [15, 16] Additionally, the great and increasing influence of the internet and social media, and the developments in the dental and medical cosmetic sector are tremendously influencing people's perception of beauty. [4, 15] Therefore, it seems essential to reassess the ideals of facial beauty and understand patients' preferences for the purpose of providing the most favorable patient-centered treatment.[14] Furthermore, several studies has focused on the role of dental and perioral esthetics in particular on the overall perception of facial aesthetic, signifying the important contribution of the dentistry in defining and understanding patients' expectations, and in the optimization in the treatment planning. [9]

According to previous studies, it was found that the years of experience in the dental field influenced the perception of facial aesthetics among dentists and dental students. [16, 17] Evaluating dental students' perception towards facial esthetics is thus essential given their central role in the treatment planning in the overall facial esthetics. Early understanding of facial esthetics analysis by dental students will enhance their judgement and therefore the quality of the treatment they provide in context of the overall facial appearance. To the best of our knowledge, only few studies have evaluated the perception of facial subunits between clinical and preclinical dental students. Therefore, the aim of this study was to assess the perception of ideal facial aesthetic subunits among preclinical and clinical dental students.

The morphometric questionnaire of various computer-generated facial features was constructed to determine the ideals of aesthetics among the students. The effect of hair, skin color, and eyes were eliminated through using a standard model and only one variable was changed each time. In contrary to the previous studies, we evaluated the earlier mentioned facial subunits in three different views: frontal view, 45 degrees view, and lateral view, which was a limitation in the previous studies. The students thus had a plenty of opportunity to evaluate each model thoroughly from different views, then they chose the most and least preferred characteristics in terms of the above-mentioned features among the 6 avatar models for each of the 6 modified facial features.

Results of our study have shown that the preclinical and clinical students agreed on the most and least attractive facial model for all features except for the jaw shape, see Table 2. Summary of the most attractive facial features and least attractive among all dental students is showed in Table 3, and Figs. 1–6. Model 2 was the most popular choice for most attractive jaw shape, however students in their clinical chose Model 4 as the most attractive jaw shape, but this was not significantly different ($p = 0.222$). The reason behind this may be due to their dental education and the clinical exposure to patients which has raised their overall aesthetics awareness. [16, 17] When comparing the jaw shape in model 2, to model 4, it looks broader and more prominent, which indicates the preference of the students in their clinical years towards having slimmer jaw shapes. When it comes to the least attractive jaw shape, the preclinical students chose model 3 in contrast to the clinical students who choose model 5. Interestingly, the jaw shape in model 5 is broad and the jaw angles are more defined which is somewhat similar to the jaw shape in model 2 that was chosen by the preclinical student as the most attractive. This seems to be in accordance with the previous finding that the clinical dental students do not perceive the broad jaw as attractive. The preclinical students perceived model 3, which has a rounded, slightly retruded jaw with less significant jaw angles, as the least attractive jaw model. This shows that there is a tendency among the preclinical dental students to prefer the broad jaw shapes. Previous study by Samizadeh found that the asian population also had a preference of a reduced lower facial third width. [9, 18]

The chin shape is also an important factor in determining the attractiveness of the lower facial third and in establishing the overall desired profile shape. [3, 7, 11, 13] Both clinical and preclinical students have agreed on the most and least attractive chin shapes. Model 6 chin shape, which is of moderate length and protrusion, was perceived as the most attractive chin shape. In contrast, the least preferred chin shape was model 2, which appears longer and more protruded. This agrees with what was reported by Naini, that ratings for attractiveness decreased on average 0.47 for each 2.5-mm increase in chin height for female faces. [11, 13]

The centered position of the nose gives it a significant role in influencing both upper and lower facial beauty. [19] Model 1 was considered the most attractive nose shape by both clinical and preclinical students. The nose appears shorter, more scooped, less projected, with a slightly rotated tip compared to model 6, which was chosen by both clinical and preclinical students as the least attractive. According to Pearson and Adamson, the nasal profile with a slight scoop, slight over-rotation, and slight underproduction was preferred by the public and the rhinoplasty group, which agrees with our findings. [19] Samizadeh demonstrated also similar results with regard to nose shapes preference among Asian population. [9]

The lips are a key feature of the lower facial third reflecting youth and attractiveness. [2, 12, 15] Similar to most of the previous characteristics, preclinical and clinical dental students have agreed on the most and least attractive mouth shapes. The most attractive mouth or lip shape chosen was model 2, which represents a full, projected lips of moderate width and a short upper lip. On the contrary, model 6 was the least attractive mouth shape as selected by both groups. The lips in model 6 are thin, less projected with

long upper lip. In contrary to the results reported by Ioi et al, which showed that a slightly retruded lip position was preferred by the dental students. [15]

The cheek bone constitutes a prime part of establishing the overall shape and attractiveness of the face. [9, 18] The two main parameters that were changing throughout the 6 models were the cheek bone prominence and the buccal fat size. Model 1, which represents a very prominent cheek bone with minimal or no buccal fat, was considered the most attractive cheek shape by all the students. However, model 3, representing a less prominent cheek bone with increased buccal fat "chubby cheeks", was the least attractive cheek shape as reported by all the students. However, Samizadeh reported that an oval facial shape with a smooth flow from the zygoma and cheek, jaw angle and jaw line, and the chin was reported to be the most attractive in their study. [9, 18]

Each facial subunit plays its own essential role in contributing to the overall facial profile shape. [6, 7, 16, 20] According to previous studies, most orthodontic treatments and orthognathic surgeries are directed towards enhancing the profile shape. [14, 16, 20] The results of our study showed that model 1 was considered the most attractive profile shape, which has a straight profile with moderate length among both groups. Similarly, a straight facial profile was the most preferred facial profile among different cultural backgrounds. [7, 14, 15] In contrast, the prognathic profile shape, which is slightly longer, as represented in model 2, was the least attractive profile shape as reported by all the students in our study. In agreement with Abu Arqoub and Al-Khateeb, who reported that the most attractive female facial profile was the one with a reduced facial height among Jordanian population. [14, 20]

One of the main limitations of our study is that most of our population were females, which restricted us from making a reliable and unbiased comparison between males and females. We recommend to conduct a large multi-university study, which evaluate these findings in more comprehensive approach. Our study showed that the dental students at Kuwait University have a perception of the facial esthetics that is largely in accordance with previously published studies. We recommend the introduction of detailed courses in the dental curriculum that focuses specifically on facial esthetics and its clinical analysis within a comprehensive approach.

Conclusions:

The aim of our study was to understand the perception and ideals of facial esthetics among university dental students, which is directly linked to the facial analysis and clinical evaluation, and subsequently the treatments conducted. The study showed that dental students at Kuwait University have a perception of the facial esthetics that is largely in accordance with previously published studies. Dental students must recognize the variations of facial units and ideals of esthetics to better understand the demands and wishes of the patients, and thus, optimizing the treatment plan to achieve this goal.

Abbreviations:

3D: three dimensional.

Declarations:

Acknowledgements:

None

Authors' contributions:

AA, HA, SA and MK conceived and designed the study. AA, HA, SA collected the data work on the acquisition and analyses. AA, HA, SA and MK interpreted the data. AA, HA, SA and MK have drafted the work or substantively revised it. All authors read and approved the final manuscript.

Availability of data and material:

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Competing interests:

The authors declare that they have no competing interests and nothing to disclose.

Consent for publication:

Not applicable.

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Ethics approval and consent to participate:

Participating students gave consent and voluntarily filled out the questionnaire, and their responses were kept anonymous. The Ethical Committee at Kuwait University approved the study, in accordance with the Helsinki Declaration (Application Number 2888/2019).

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Table:

Due to technical limitations, table 3 docx is only available as a download in the Supplemental Files section.

Figures

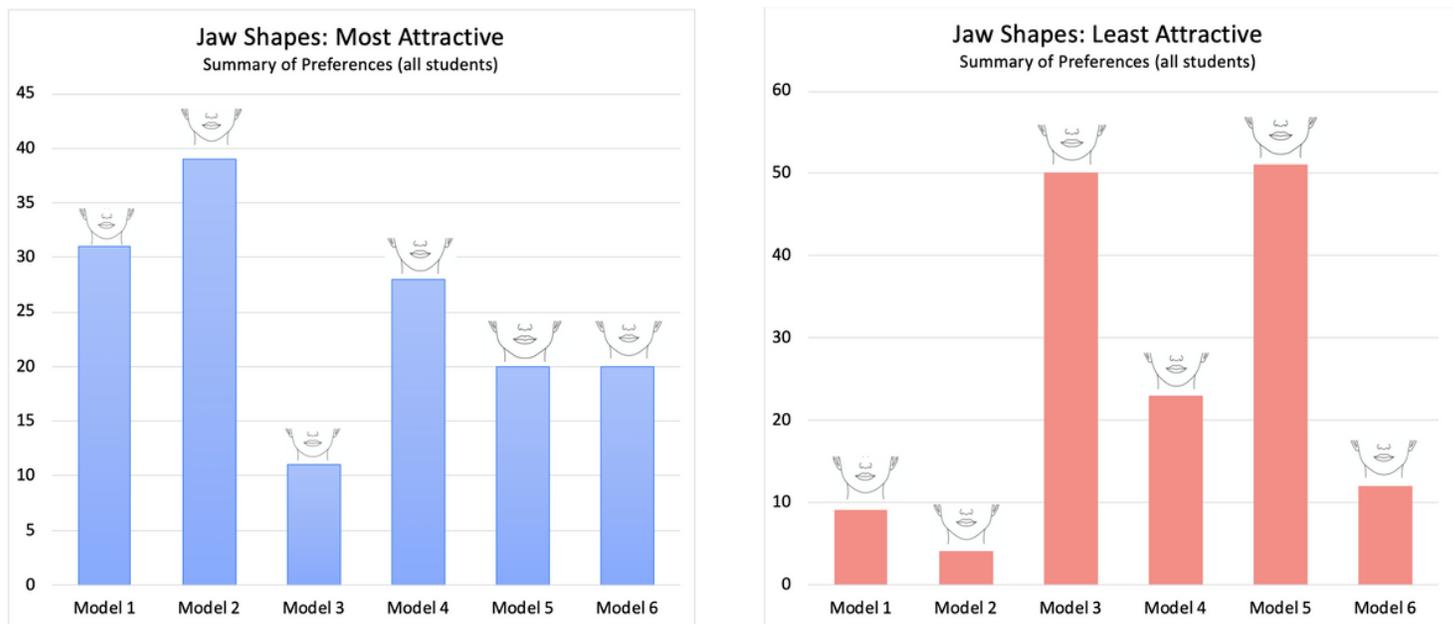


Figure 1

The overall summary of the most attractive and least attractive jaw shapes as selected by all students.

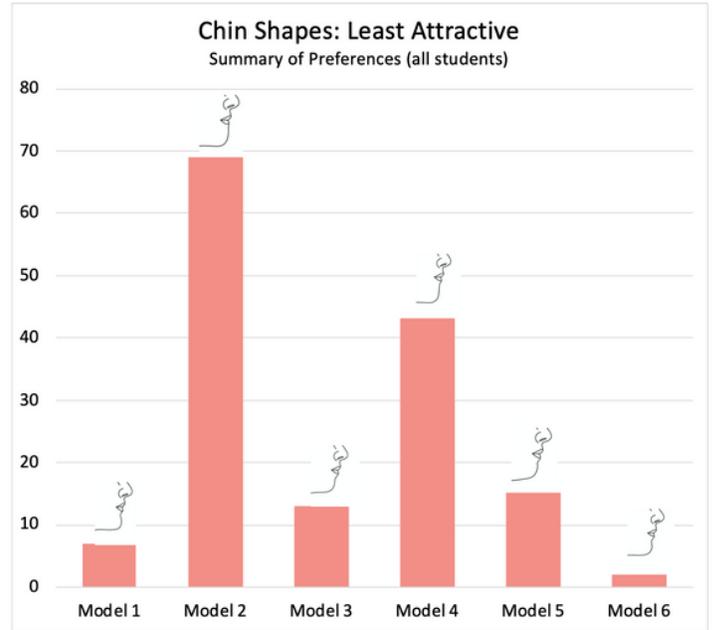
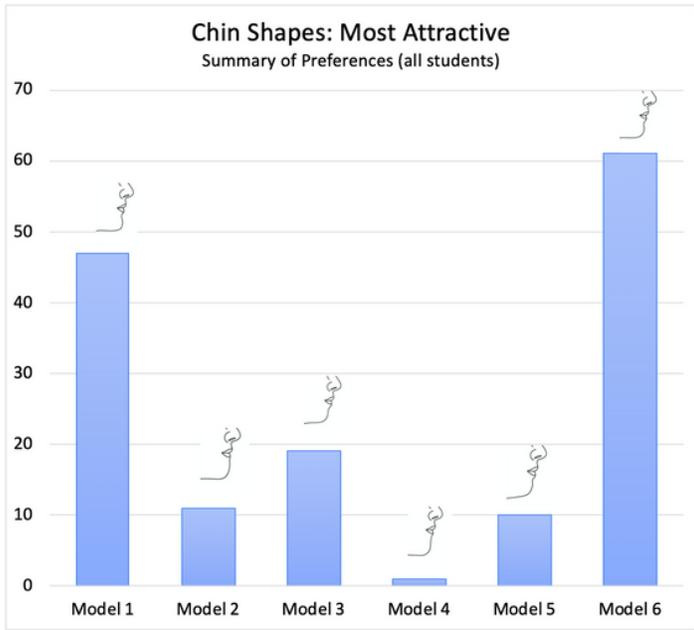


Figure 2

The overall summary of the most attractive and least attractive chin shapes as selected by all students.

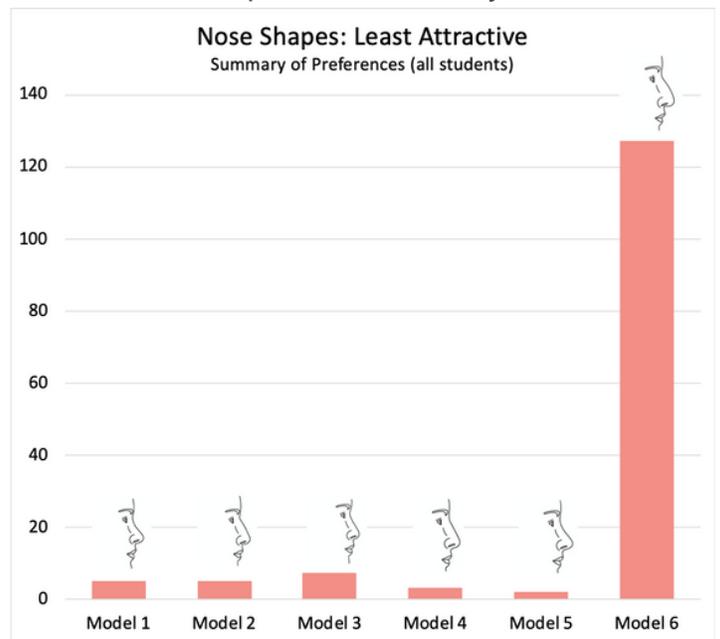
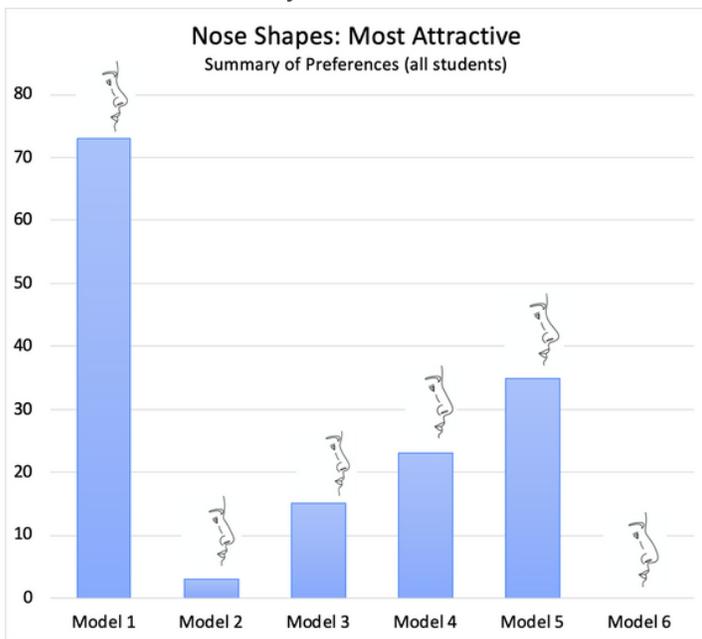


Figure 3

The overall summary of the most attractive and least attractive nose shapes as selected by all students.

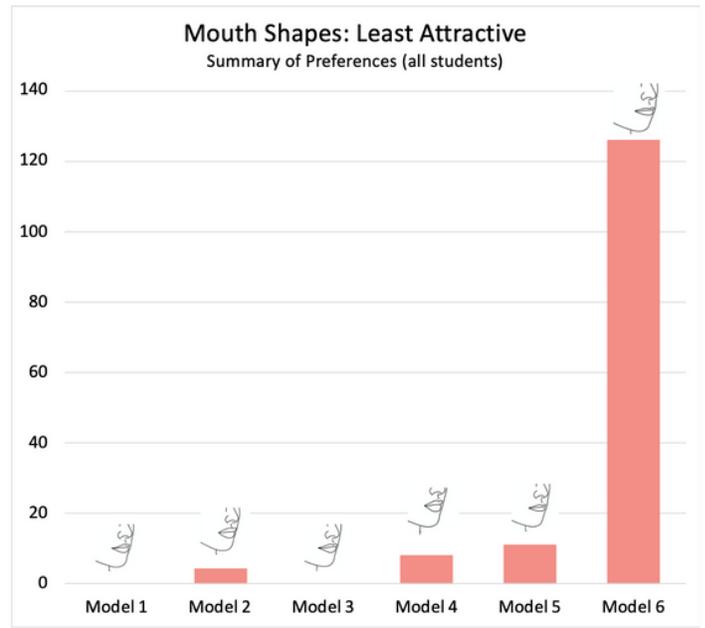
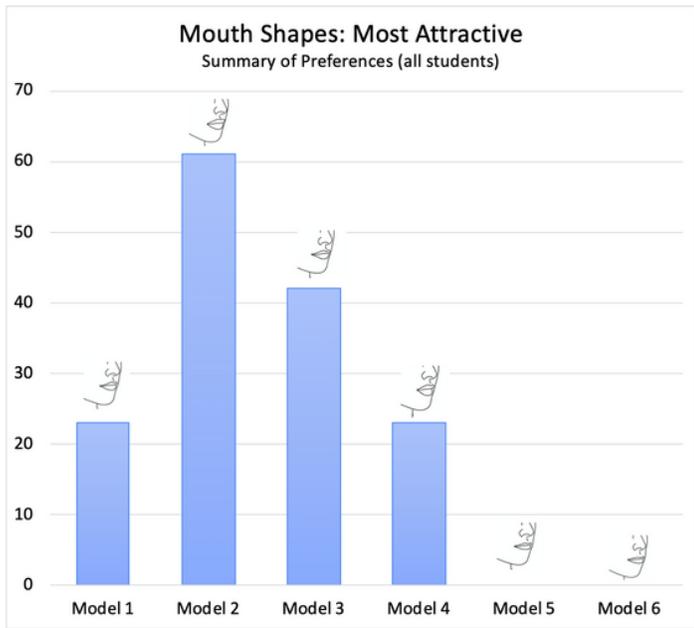


Figure 4

The overall summary of the most attractive and least attractive mouth shapes as selected by all students.

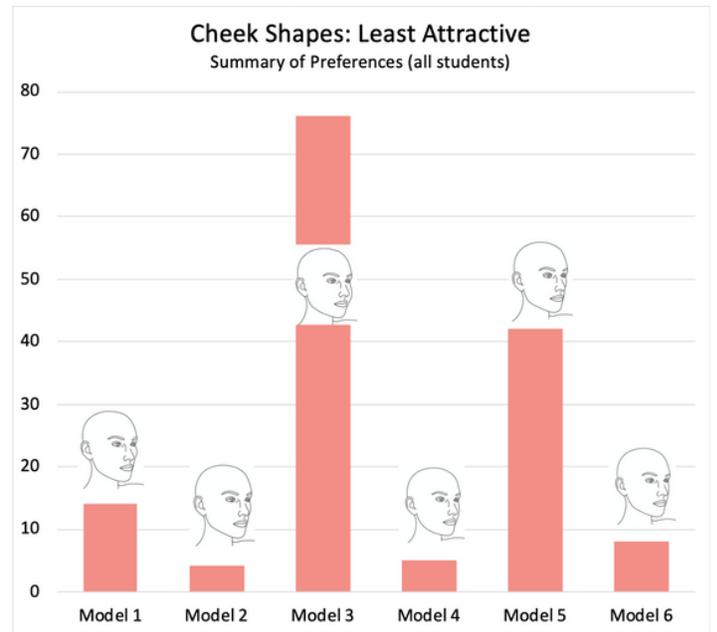
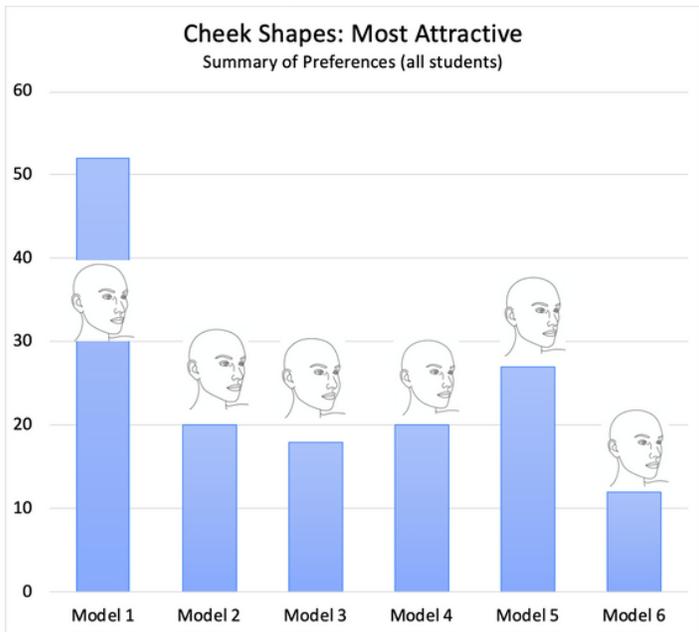


Figure 5

The overall summary of the most attractive and least attractive cheek shapes as selected by all students.

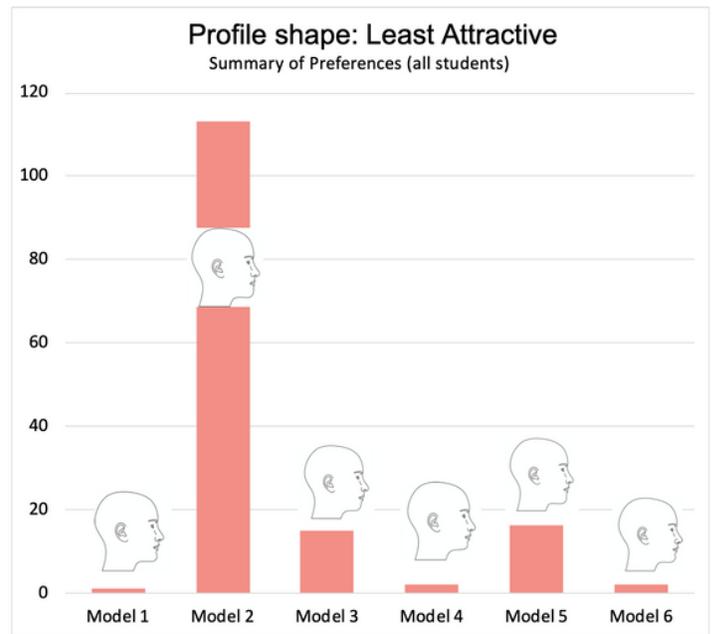
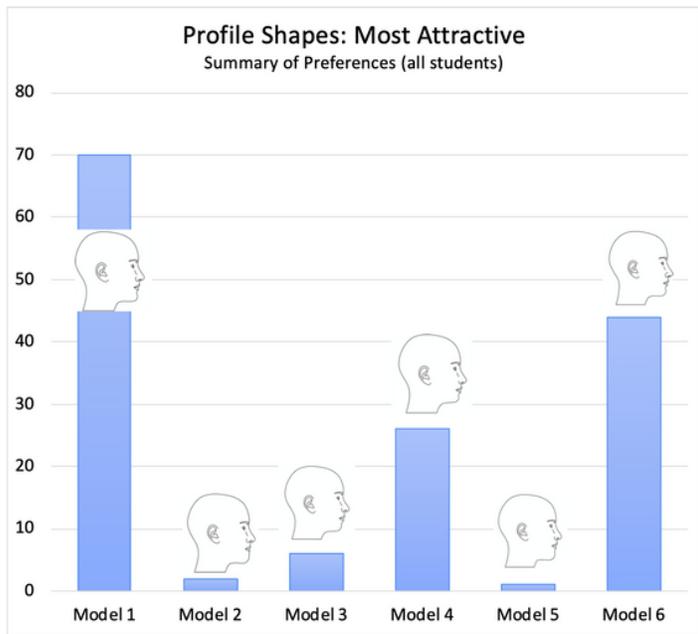


Figure 6

The overall summary of the most attractive and least attractive profile shapes as selected by all students.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table3.docx](#)
- [surveystudents30062020.pdf](#)